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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s):	Michael T. ROEDER	**Confirmation No.:**	4688
Serial No.:	10/633,444	**Examiner:**	Kan YUEN
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Title: AUTOMATED ROUTER LOAD BALANCING

MAIL STOP APPEAL BRIEF - PATENTS
Commissioner for Patents
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APPEAL BRIEF - PATENTS

Sir:

This is an Appeal Brief in connection with the decisions of the Examiner in a Final Office Action mailed November 23, 2010, and in connection with the Notice of Appeal filed on February 23, 2011.

It is respectfully submitted that the present application has been at least twice rejected.

Each of the topics required in an Appeal Brief and a Table of Contents are presented herewith and labeled appropriately.

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(1) Real Party in Interest

The real party in interest is Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 11445 Compaq Center Drive West, Houston, TX 77070, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

(2) Related Appeals and Interferences

The Appellant is unaware of any appeals or interferences related to this case.

(3) Status of Claims

Claims 1-23 are pending in the present application.

Claims 1-3 and 6-23 stand rejected.

Claims 4 and 5 are objected as being dependent upon a rejected base claim but are otherwise allowable.

Pursuant to 37 C.F.R. § 41.37, the Appellant hereby appeals the Examiner's decision finally rejecting all of the pending claims to the Board of Patent Appeals and Interferences. Therefore, the rejections of claims 1-3 and 6-23 of this application are appealed.

(4) Status of Amendments

No amendment was filed subsequent to the Final Office Action dated November 23, 2010.

A copy of the claims at issue on appeal is attached as the Claims Appendix.

(5) Summary of Claimed Subject Matter

Claims 1, 7, 17 and 23 are the independent claims in this appeal. It should be understood that the citations below to the original disclosure as providing support for the claimed features are merely exemplary and do not limit the claim features to only those citations.

Independent Claim 1

Independent claim 1 pertains to a method of load balancing between a plurality of routers by automated resetting of gateways (*specification,* page 4, line 13 through page 6, line 2; flow chart in Figure 2), the method comprising:

receiving a packet at a first router from a source host to be forwarded to a destination host (*specification,* page 4, lines 26-28; block 204 in Figure 2);

identifying a current load on the first router (Router R1 in Figure 1; *Specification,* page 4, lines 18-31);

determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router (*specification,* page 4, lines 21-25);

applying an algorithm at the first router to select a second router (Router R2 in Figure 1) from the plurality of routers to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers (*specification,* page 4, lines 18-31; block 206 in Figure 2); and

sending an ICMP redirect message from the first router to the source host to reset a default gateway of the source host to be the second router for packets destined to the destination host (*specification,* page 5, lines 13-26; block 208 in Figure 2).

Independent Claim 7

Independent claim 7 pertains to an apparatus for routing packets with a load balancing capability involving automated resetting of gateways (*specification,* page 4, line 13 through page 6, line 2; flow chart in Figure 2), the apparatus comprising:

a first router (Router R1 in Figure 1) configured to receive a packet from a source host to be routed to a destination host (*specification,* page 4, lines 26-28; block 204 in Figure 2);

a selection module configured to identify a current load on the first router (*specification,* page 4, lines 18-31), determine whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router (*specification,* page 4, lines 21-25), apply an algorithm to select a second router (Router R2 in Fig. 1) from the plurality of routers to be a next gateway of the

source host for packets destined to the destination host (*specification,* page 4, lines 18-31; block 206 in Figure 2); and

a transmission module configured to send an ICMP redirect message to the source host to reset a current gateway of the source host to be said other router for packets destined to the destination host (*specification,* page 5, lines 13-26; block 208 in Figure 2).

Independent Claim 17

Independent claim 17 pertains to a method of load balancing between a plurality of routers by automated selection of a router to respond to an ARP request (*specification,* page 6, line 3 through page 7, line 30; flow chart in Figure 3), the method comprising:

in a first router (Router R1 in Figure 1), receiving a packet from a requesting host for forwarding via a network (*specification,* page 6, lines 19-20; block 304 in Figure 3), identifying a current load of the first router (*specification,* page 6, lines 11-17), determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router (*specification,* page 6, lines 18-21), and transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers (*specification,* page 6, lines 18-26);

in the other ones of the plurality of routers (Router R2 in Figure 1), receiving the ARP request from the first router (*specification,* page 6, lines 27-28),

performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request (*specification,* page 6, lines 28-30; block 306 in Figure 3); and

sending an ARP reply from the selected router to the requesting host (*specification,* page 7, lines 18-20; block 308 in Figure 3).

Independent Claim 23

Independent claim 23 pertains to a system of load balancing between a plurality of routers involving automated selection of a router to respond to an ARP request (*specification,* page 6, line 3 through page 7, line 30; flow chart in Figure 3), the system comprising:

in each of the plurality of routers (Routers R1 and R2 in Figure 1),

means (Router R1) for receiving a packet from a requesting host for forwarding via a network (*specification,* page 6, lines 18-26);

means (Router R1) for identifying a current load of the plurality of routers (*specification,* page 6, lines 11-17);

means (Router R1) for determining whether the packet is to be routed by another one of the plurality of routers in response to the identified current load (*specification,* page 6, lines 18-21); and

means (Router R1) for transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers (*specification,* page 6, lines 18-26);

means (Router R1) for receiving the ARP request from the other ones of the plurality of routers (*specification,* page 6, lines 27-28);

means (Router R1) for performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request (*specification,* page 6, lines 28-30; block 306 in Figure 3); and

means (Router R1) for sending an ARP reply from the selected router to the requesting host (*specification,* page 7, lines 18-20; block 308 in Figure 3).

(6) Grounds of Rejection to be Reviewed on Appeal

A. Whether claims 1, 6-7, and 13-16 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,473,599 to Li et al. (hereinafter "Li") in view of U.S. Patent Application Publication No. 2003/0200333 to Espieu et al. (hereinafter "Espieu"), and further in view of U.S. Patent Application Publication No. 2003/0158951 to Primak et al. (hereinafter "Primak")..

B. Whether claims 2 and 8 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and RFC 1256 by S. Deering (hereinafter "Deering").

C. Whether claims 3 and 9 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and U.S. Patent No. 6,295,276 to Datta et al. (hereinafter "Datta").

D. Whether claims 10-12 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and U.S. Patent No. 7,010,611 to Wiryaman et al. (hereinafter "Wiryaman").

E. Whether claims 17-18 and 21-23 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Datta in view of U.S. Patent No. 5,963,540 to Bhaskaran (hereinafter "Bhaskaran").

F. Whether claims 19-20 were properly rejected under 35 U.S.C. §103(a) as being unpatentable over Datta in view of Bhaskaran and further in view of Wiryaman

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(7) Arguments

A. The rejection of claims 1, 6-7, and 13-16 under 35 U.S.C. §103(a) as being unpatentable over unpatentable over Li in view of Espieu, and further in view of Primak should be reversed.

The test for determining if a claim is rendered obvious by one or more references for purposes of a rejection under 35 U.S.C. § 103 is set forth in *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007):

> "Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented." Quoting *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1 (1966).

According to the Examination Guidelines for Determining Obviousness Under 35 U.S.C. 103 in view of *KSR International Co. v. Teleflex Inc.*, Federal Register, Vol. 72, No. 195, 57526, 57529 (October 10, 2007), once the *Graham* factual inquiries are resolved, there must be a determination of whether the claims would have been obvious to one of ordinary skill in the art based on any one of the following proper rationales:

> (A) Combining prior art elements according to known methods to yield predictable results; (B) Simple substitution of one known element for another to obtain predictable results; (C) Use of known technique to improve similar devices (methods, or products) in the same way; (D) Applying a known technique to a known device (method, or product) ready for improvement to yield predictable results; (E) ''Obvious to try''—choosing from a finite number of identified, predictable solutions, with a reasonable expectation of success; (F) Known work in one field of endeavor may prompt variations of it for use in either the same

> field or a different one based on design incentives or other market forces if the variations would have been predictable to one of ordinary skill in the art; (G) Some teaching, suggestion, or motivation in the prior art that would have led one of ordinary skill to modify the prior art reference or to combine prior art reference teachings to arrive at the claimed invention. *KSR International Co. v. Teleflex Inc.*, 550 U.S. 398, 82 USPQ2d 1385 (2007).

Furthermore, as set forth in *KSR International Co. v. Teleflex Inc.*, quoting from *In re Kahn*, 441 F. 3d 977, 988 (CA Fed. 2006), "[R]ejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasonings with some rational underpinning to support the legal conclusion of obviousness."

Furthermore, as set forth in MPEP 2143.03, to ascertain the differences between the prior art and the claims at issue, "[a]ll claim limitations must be considered" because "all words in a claim must be considered in judging the patentability of that claim against the prior art." *In re Wilson*, 424 F.2d 1382, 1385.

- **Claims 1, 6-7, and 13-16:**

Claims 1, 6-7, and 13-16 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak. This rejection should be reversed for at least the following reasons.

  - Independent Claim 1:

Independent claim 1 recites a method comprising, *inter alia*,

> applying an algorithm at the first router to select a second router from the plurality of routers to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers.

In the rejection of claim 1, the Examiner correctly admits that Li fails to teach applying an algorithm to select a second router from a plurality of routers (See *Final Office Action*, bottom of page 8). The Examiner's admission is correct because Li discloses in Fig. 2a a network segment 118 including three routers R1-R3, and at any one time, one of the routers R1-R3 is the active router to route packets to destinations and another one of the routers is a standby router (See *Li*, col. 6, lines 40-64). Li also discloses that when the active router decides that the optimal router for the packet from a host to take is through the standby router, the active router instructs the host to use the standby router (See *Li*, col. 16, lines 10-26). Thus, in Li, the active router merely provides the identity of the standby router to the host, and does not run an algorithm to select a second router from a plurality of routers in the network to be the next gateway, as recited in claim 1.

In the rejection of claim 1, after admitting that Li fails to teach selecting a router from a plurality of routers, the Examiner asserts that the feature of selecting a second router from a plurality of routers is disclosed in Primak (See *Final Office Action*, bottom of page 9 and top of page 10). More specifically, the Examiner states that the claim feature above is disclosed in Primak because Primak discloses in Fig. 2 and paragraphs [0043]-0045],

> When the router 10 receives a request from the web server 20b, the router 10 examines the header of the request for a session ID. If no matching session record is found the router 10 selects an application server from a plurality of application servers based on available capacity (load values stored in the load table 18).

(See *Final Office Action*, page 9, emphasis added). However, as shown in the above quote, Primak discloses selecting an application server from a plurality of application servers.

Application servers, however, are not the same as routers because application servers do not route packets. Rather, application servers run applications. Therefore, contrary to the assertion by the Examiner, Primak fails to teach or suggest selecting a router from a plurality of routers, as recited in independent claim 1. As such, Primak fails to cure the deficiencies of Li.

Espieu also fails to teach or suggest the features recited above in claim 1. More specifically, Espieu discloses in Fig. 1 a system for balancing the load among the routers 12, 14, and 16 in the system, in which each router examines its current load and, if the current load is higher than a threshold, assigns a new priority for the servers 18, 20, and 22, such that the flow of data from a server is automatically transferred to another router with a higher priority (See *Espieu*, paragraphs [0009] and [0018]). In other words, in Espieu, all of the routers 12, 14, and 16 prioritize themselves into a ranking so that the servers 18, 20, and 22 know which routers to use (See also *Espieu*, paragraph [0020]). As a result, the routers in Espieu do not select another router to be the next gateway for the servers. Rather, the routers merely prioritize themselves into a ranking to divert the data flows to the other routers. Thus, Espieu also fails to cure the deficiencies discussed above in Li.

Accordingly, the proposed combination of Li in view of Espieu and Primak fails to teach or suggest "applying an algorithm at the first router to select a second router from the plurality of routers to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers," as recited in independent claim 1.

For at least the foregoing reasons, the Examiner has failed to establish that independent claim 1 is *prima facie* obvious in view of the combined disclosures contained in Li in view of Espieu and Primak, as proposed by the Examiner. It is therefore respectfully requested that the rejection of independent claim 1 be reversed and the claim be allowed.

- Independent Claim 7:

Independent claim 7 recites, *inter alia*,

> a selection module configured to ... apply an algorithm to select a second router from the plurality of routers to be a next gateway of the source host for packets destined to the destination host, wherein the second router is un-predetermined.

Thus, these features of independent claim 7 are similar to those recited in independent claim 1 as discussed above. Accordingly, independent claim 7 is also believed to be allowable over the cited documents of record for at least the same reasons as set forth above in connection with independent claim 1. It is therefore respectfully requested that the rejection of independent claim 7 be reversed, and this claim be allowed.

- Dependent Claims 6 and 13-16:

Claims 6 and 13-16 are dependent from one of independent claims 1 and 7. Thus, they are also believed to be allowable over the cited documents of record for at least the same reasons as set forth above in connection with independent claims 1 and 7.

Furthermore, these dependent claims recite additional features not found in the cited documents of record. For instance, claim 13 recites,

> wherein the apparatus is configured to communicate load levels to and receive load levels from other routing apparatus, and wherein the selection module applies a load-based algorithm. (*Emphasis added*)

In the rejection of claim 13, the Examiner asserts that the features recited above are disclosed in Primak, paragraphs [0043]-[0045] and Fig. 2 (See *Final Office Action*, page 10). However, that assertion is respectfully traversed. In paragraphs [0043]-[0045] and Fig. 2, Primak discloses that the router 10 determines which application server 30 has available capacity to process a request from client 60, and then selects one of the application servers 30 based on load values stored in the application server load table 18. As such, the passages above in Primak merely disclose how the router 10 selects one of the application servers 30. However, the router 10 in Fig. 2 of Primak does not communicate the load levels to other routers or receives load levels from other routers. Accordingly, Primak fails to teach or suggest "wherein the apparatus is configured to communicate load levels to and receive load levels from other routing apparatus," as recited in claim 13.

In view of the foregoing reasons, it is respectfully requested that the rejection of claims 6 and 13-16 be reversed, and these dependent claims be allowed.

B. The rejection of claims 2 and 8 under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Deering should be reversed.

Claims 2, 3, and 8-10 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Deering. This rejection should be reversed for at least the following reasons.

Claims 2 and 8 are dependent from independent claims 1 and 7, respectively. As discussed above, the proposed combination of Li in view of Espieu and Primak fails to disclose all of the features of independent claims 1 and 7. In setting forth the rejection of claims 2 and 8, the Examiner has not and cannot reasonably assert that the disclosure contained in Deering makes up for any of the deficiencies with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Li in view of Espieu and Primak with the disclosure contained in Deering, the proposed modification would still fail to yield all of the features of independent claims 1 and 7, upon which claims 2 and 8 depend.

For at least the foregoing reasons, the Examiner has failed to establish that claims 2 and 8 are *prima facie* obvious in view of the combined disclosures contained in Li, Espieu, Primak, and Deering. Therefore, reversal of the rejection of claims 2 and 8 and allowance of these claims are respectfully requested.

Furthermore, these dependent claims recite additional features not found in the cited documents of record. For example, claim 2 recites, "the algorithm comprises a pseudo-random algorithm," wherein the "algorithm" in claim 2 refers to the algorithm recited in independent claim 1, being applied at a first router to select a second router from a plurality of routers.

In the rejection of claim 2, the Examiner asserts that page 10 of Deering discloses a pseudo-random algorithm (See *Final Office Action*, page 11). However, that assertion is respectfully traversed. Page 10 of Deering discloses a system in which a host sends a request or solicitation for IP broadcast addresses of routers, and the routers respond to the request. Page 10 of Deering also discloses that to prevent synchronization with other responding routers, a router may respond in a small random interval not greater than a predetermined delay, and the interval timer is reset to a new random value (See *Deering*, top of page 10).

As such, the disclosure on page 10 of Deering relates to a host sending a request for an IP address and a router responding to the request. The disclosure on page 10 of Deering is, however, unrelated to an algorithm, much less a pseudo-random algorithm, being applied at a first router to select a second router as the next gateway for the host. Therefore, Deering fails to teach or suggest the algorithm recited in claim 2.

In addition, even if assuming for the sake of argument that Deering disclosed a pseudo-random algorithm for selecting a second router, it still would not have been obvious for one skilled in the art to utilize the teaching of Deering into Li. As discussed above, in Li, col. 6, lines 27-40, when the active router decides that packets should be sent through the standby router, the standby router is already being determined. In other words, the active router does not select another router to be the next gateway at random. As a result, the active router in Li would not have used a pseudo-random algorithm, a round robin algorithm, or a hash algorithm to select the standby router as the next gateway. Therefore, one skilled in the art would not have utilized the non-existing pseudo-random algorithm of Deering into Li.

Claim 8 recites features similar to those of claim 2. Thus, the same arguments against the rejection of claim 2 above apply to claim 8.

C. The rejection of claims 3 and 9 under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Datta should be reversed.

Claims 3 and 9 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Datta. This rejection should be reversed for at least the following reasons.

Claims 3 and 9 are dependent from independent claims 1 and 7, respectively. As discussed above, the proposed combination of Li in view of Espieu and Primak fails to disclose all of the features of independent claims 1 and 7. In setting forth the rejection of claims 3 and 9, the Examiner has not and cannot reasonably assert that the disclosure contained in Datta makes up for any of the deficiencies with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Li in view of Espieu and Primak with the disclosure contained in Datta, the proposed modification would still fail to yield all of the features of independent claims 1 and 7, upon which claims 3 and 9 depend.

For at least the foregoing reasons, the Examiner has failed to establish that claims 3 and 9 are *prima facie* obvious in view of the combined disclosures contained in Li, Espieu, Primak, and Datta. Therefore, reversal of the rejection of claims 3 and 9 and allowance of these claims are respectfully requested.

D. The rejection of claims 10-12 under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Wiryaman should be reversed.

Claims 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li in view of Espieu, and further in view of Primak and Wiryaman. This rejection should be reversed for at least the following reasons.

Claims 10-12 are dependent from independent claim 7. As discussed above, the proposed combination of Li in view of Espieu and Primak fails to disclose all of the features of independent claim 7. In setting forth the rejection of claims 10-12, the Examiner has not and cannot reasonably assert that the disclosure contained in Wiryaman makes up for any of the deficiencies with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Li in view of Espieu and Primak with the disclosure contained in Wiryaman, the proposed modification would still fail to yield all of the features of independent claim 7, upon which claims 10-12 depend.

For at least the foregoing reasons, the Examiner has failed to establish that claims 10-12 are *prima facie* obvious in view of the combined disclosures contained in Li, Espieu, Primak, and Wiryaman. Therefore, reversal of the rejection of claims 10-12 and allowance of these claims are respectfully requested.

E. The rejection of claims 17-18 and 21-23 under 35 U.S.C. §103(a) as being unpatentable over Datta in view of Bhaskaran should be reversed.

Claim 17-18 and 21-23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Datta in view of Bhaskaran. This rejection should be reversed for at least the following reasons.

- Independent Claim 23:

Independent claim 23 recites, *inter alia*,

> in each of the plurality of routers, ...
> means for identifying a current load of the plurality of routers.

In setting forth the rejection of claim 23, the Examiner simply repeats the above feature of claim 23, but fails to show where the support for that feature in Datta, Bhaskaran or other cited documents of record (See *Final Office Action*, bottom of page 13).

In the "Response to Arguments" section of the Final Office Action, the Examiner asserts that the feature recited above in claim 23 is disclosed in Datta. Specifically, the Examiner states,

> Since the controller 202 [in Datta] and its components (see fig. 4) including the selector 406 may be implemented on one or more of the nodes 102 and/or router 110 (see column 13, lines 57-60), therefore the routers 110 may include the functionality to acquire each individual routers 110 to obtain the current load of each routers [sic]. (See *Final Office Action*, page 5).

The Examiner's assertion above is respectfully traversed because such a disclosure in Datta simply means that the controller 202 in Fig. 3 of Datta could be implemented on one of the nodes 102 or on one of the routers 110 in Fig. 3. However, that disclosure in Datta does not imply, teach, or suggest that each of the routers identifies a current load of the plurality of routers. Even if the controller 202 were implemented on all of the routers 110, each of the

routers 110 would still not have a means for identifying a current load of the plurality of routers. Therefore, Datta fails to teach or suggest "means for identifying a current load of the plurality of routers" in each of the plurality of routers, as recited in independent claim 23.

Claim 23 also recites,

> in each of the plurality of routers, ...
> means for determining whether the packet is to be routed by another one of the plurality of routers in response to the identified current load.

In the "Response to Arguments" section of the Final Office Action, the Examiner states that from the disclosure in col. 15, lines 15-35 of Datta, the controller 202 and its components may be implemented on one or more of the routers 110, and as a result, each router 110 has the capacity to perform the router selection based on the current load information of all of the routers 110. (See *Final Office Action*, page 5). That assertion is respectfully traversed because even if the controller 202 in Fig. 3 of Datta is implemented in each of the routers 110, the controller 202 still has the function of deciding which router 110 to route the packet. As such, not every router 110 in Fig. 3 determines whether the packet is to be routed by another router. Therefore, even when the controller 202 is implemented into the routers 110, each of the routers 110 of Datta still fails to have "means for determining whether the packet is to be routed by another one of the plurality of routers in response to the identified current load" as recited in claim 23.

Claim 23 recites,

> means for transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers.

In the rejection of claim 23, the Examiner correctly admits that Datta fails to teach or suggest the features recited above (See *Final Office Action*, page 15). The Examiner then asserts that the features recited above are disclosed in Bhaskaran, col. 2, lines 64-67, col. 3, lines 1-10, col. 4, lines 50-67, and col. 5, lines 1-10. *Id.* However, that assertion is respectfully traversed. In the cited passages, Bhaskaran discloses that the servers send the ARP requests to a failed router to obtain the MAC address of a functional router. Thus, in Bhaskaran, the ARP requests are sent to only one router. As such, the ARP requests are not sent to "other ones of the plurality of routers" (i.e., a plurality of routers). Therefore, Bhaskaran fails to teach or suggest that each router includes "means for transmitting an ARP request to other ones of the plurality of routers," as recited in claim 23. Thus, Bhaskaran fails to cure the deficiencies of Datta. As a result, the combination of Datta in view of Bhaskaran fails to teach or suggest "means for transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers," as recited in independent claim 23.

Note that the arguments above were presented in the previous Response (See *Response* filed September 1, 2010, page 26). However, the Examiner did not respond to the arguments above in the Final Office Action. Instead, in the "Response to Arguments" section of the Final Office Action, the Examiner asserts that the specification of the present application fails to disclose the feature "means for transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed

by another one of the plurality of routers" recited in claim 23 (See *Final Office Action*, page 3). Specifically, the Examiner states,

> The specification does not provide a concrete evident or expressly disclose the step where **after the LAN receives the ARP message, the LAN forwards the ARP message to a router coupled to the LAN to process the message**. Therefore the specification fails to specifically disclose the omitted step. *Id.*

However, that assertion is respectfully traversed because the specification does not proper support for the feature recited above in claim 23. For instance, the specification describes on page 6, lines 23-24 that, "If the IP address is not found in the ARP cache, an ARP request message may be broadcast to the network" (*Emphasis added*). That "broadcast" at least indicates that an ARP request is transmitted to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers, as recited in claim 23. Thus, the specification of the present application does have proper support for the claim feature above.

For at least the foregoing reasons, the Examiner has failed to establish that claim 23 is *prima facie* obvious in view of the combined disclosures contained in Datta and Bhaskaran. Therefore, reversal of the rejection of claim 23 and allowance of this claim is respectfully requested.

- Independent Claim 17:

  Independent claim 17 recites a method comprising, *inter alia*,

  > in a first router, receiving a packet from a requesting host for forwarding via a network, identifying a current load of the first router, determining

whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router, and transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers;

in the other ones of the plurality of routers, receiving the ARP request from the first router,

performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request.

Thus, the features recited above in independent claim 17 are similar to the features recited in independent claim 23 as discussed above. Accordingly, claim 17 is also believed to be allowable over the cited documents of record for at least the same reasons as set forth above in connection with independent claim 23. It is therefore respectfully requested that the rejection of independent claim 17 be reversed, and this claim be allowed.

- Dependent Claims 18 and 21-22:

Claims 18 and 21-22 are dependent from independent claim 17. Thus, they are also believed to be allowable over the cited documents of record for at least the same reasons as set forth above in connection with independent claim 17. It is therefore respectfully requested that the rejection of claims 18 and 21-22 be reversed, and these dependent claims be allowed.

F. The rejection of claims 19-20 under 35 U.S.C. §103(a) as being unpatentable over Datta in view of Bhaskaran, and further in view of Wiryaman should be reversed.

Claims 19-20 were rejected under 35 U.S.C. §103(a) as being unpatentable over Datta in view of Bhaskaran, and further in view of Wiryaman. This rejection should be reversed for at least the following reasons.

Claims 19-20 are dependent from independent claim 17. As discussed above, the proposed combination of Datta in view of Bhaskaran fails to disclose all of the features of independent claim 17. In setting forth the rejection of claims 19-20, the Examiner has not and cannot reasonably assert that the disclosure contained in Wiryaman makes up for any of the deficiencies with respect to the proposed combination. Accordingly, even assuming for the sake of argument that one of ordinary skill in the art were somehow motivated to modify the proposed combination of Datta in view of Bhaskaran with the disclosure contained in Wiryaman, the proposed modification would still fail to yield all of the features of independent claim 17, upon which claims 19-20 depend.

For at least the foregoing reasons, the Examiner has failed to establish that claims 19-20 are *prima facie* obvious in view of the combined disclosures contained in Datta, Bhaskaran, and Wiryaman. Therefore, reversal of the rejection of claims 19-20 and allowance of these claims are respectfully requested.

(8) Conclusion

For at least the reasons given above, the rejection of claims 1-3 and 6-23 described above should be reversed and these claims allowed.

Please grant any required extensions of time and charge any fees due in connection with this Appeal Brief to deposit account no. 08-2025.

Respectfully submitted,

Dated: April 25, 2011

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(9) Claim Appendix

1. (Previously Presented) A method of load balancing between a plurality of routers by automated resetting of gateways, the method comprising:

receiving a packet at a first router from a source host to be forwarded to a destination host;

identifying a current load on the first router;

determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router;

applying an algorithm at the first router to select a second router from the plurality of routers to be a next gateway for the source host for packets destined to the destination host in response to a determination that the packet is to be routed by another one of the plurality of routers; and

sending an ICMP redirect message from the first router to the source host to reset a default gateway of the source host to be the second router for packets destined to the destination host.

2. (Original) The method of claim 1, wherein the algorithm comprises a pseudo-random algorithm.

3. (Original) The method of claim 1, wherein the algorithm selects the next default gateway using a round robin type selection process.

6. (Original) The method of claim 1, wherein the algorithm is load based, and further comprising communicating load levels amongst the plurality of routers.

7. (Previously Presented) An apparatus for routing packets with a load balancing capability involving automated resetting of gateways, the apparatus comprising:

a first router configured to receive a packet from a source host to be ~~forward~~ routed to a destination host;

a selection module configured to identify a current load on the first router, determine whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router, apply an algorithm to select a second router from the plurality of routers to be a next gateway of the source host for packets destined to the destination host; and

a transmission module configured to send an ICMP redirect message to the source host to reset a current gateway of the source host to be said second router for packets destined to the destination host.

8. (Original) The apparatus of claim 7, wherein the selection module comprises a pseudo-random number generator.

9. (Original) The apparatus of claim 7, wherein the selection module applies a round-robin type algorithm to select the next gateway.

10. (Original) The apparatus of claim 7, wherein the selection module applies a hash function.

11. (Previously Presented) The apparatus of claim 10, wherein the hash function is a function of a source IP address.

12. (Original) The apparatus of claim 10, wherein the hash function is a function of a combination of the source and destination IP addresses.

13. (Original) The apparatus of claim 7, wherein the apparatus is configured to communicate load levels to and receive load levels from other routing apparatus, and wherein the selection module applies a load-based algorithm.

14. (Original) The apparatus of claim 13, wherein the load-based algorithm comprises a weighted hash algorithm.

15. (Original) The apparatus of claim 13, wherein the load-based algorithm comprises a weighted round robin algorithm.

16. (Original) The apparatus of claim 13, wherein the load-based algorithm comprises a pseudo-random algorithm.

17. (Previously Presented) A method of load balancing between a plurality of routers by automated selection of a router to respond to an ARP request, the method comprising:

in a first router, receiving a packet from a requesting host for forwarding via a network, identifying a current load of the first router, determining whether the packet is to be routed by another one of the plurality of routers based upon the identified current load of the first router, and transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers;

in the other ones of the plurality of routers, receiving the ARP request from the first router,

performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request; and

sending an ARP reply from the selected router to the requesting host.

18. (Previously Presented) The method of claim 17, further comprising forwarding a packet from a source IP address to a destination IP address.

19. (Original) The method of claim 17, wherein the algorithm comprises a hash function.

20. (Previously Presented) The method of claim 19, wherein the hash function is a function of a source and a destination IP addresses.

21. (Previously Presented) The method of claim 17, wherein the algorithm determines the selected router using a round robin type selection process.

22. (Original) The method of claim 17, wherein the algorithm is load based, and further comprising communicating load levels amongst the plurality of routers.

23. (Previously Presented) A system of load balancing between a plurality of routers involving automated selection of a router to respond to an ARP request, the system comprising:

in each of the plurality of routers,

means for receiving a packet from a requesting host for forwarding via a network;

means for identifying a current load of the plurality of routers;

means for determining whether the packet is to be routed by another one of the plurality of routers in response to the identified current load; and

means for transmitting an address resolution protocol (ARP) request to other ones of the plurality of routers in response to a determination that the packet is to be routed by another one of the plurality of routers;

means for receiving the ARP request from the other ones of the plurality of routers;

means for performing the automated selection of the router to respond to the ARP request by applying an algorithm at each of the other ones of the plurality of routers to determine which single router is to respond to the ARP request; and

means for sending an ARP reply from the selected router to the requesting host.

(10) Evidence Appendix

None.

(11) Related Proceedings Appendix

None.